

FIGURE 1B

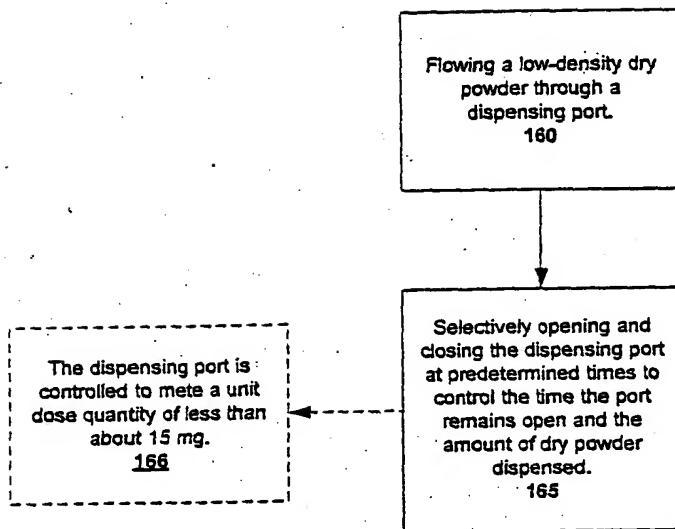
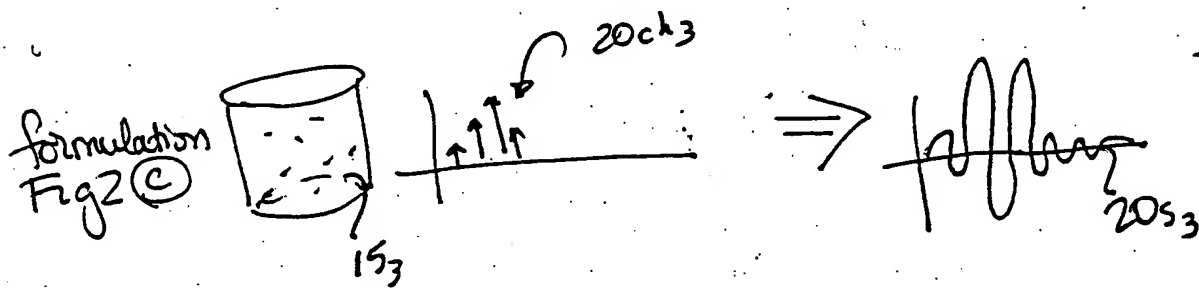
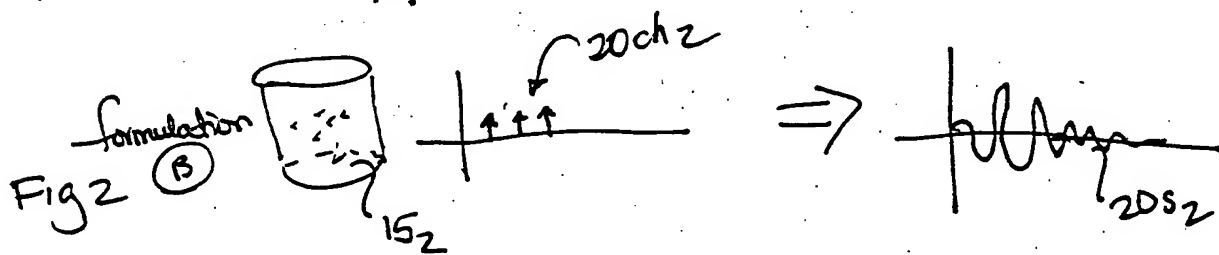
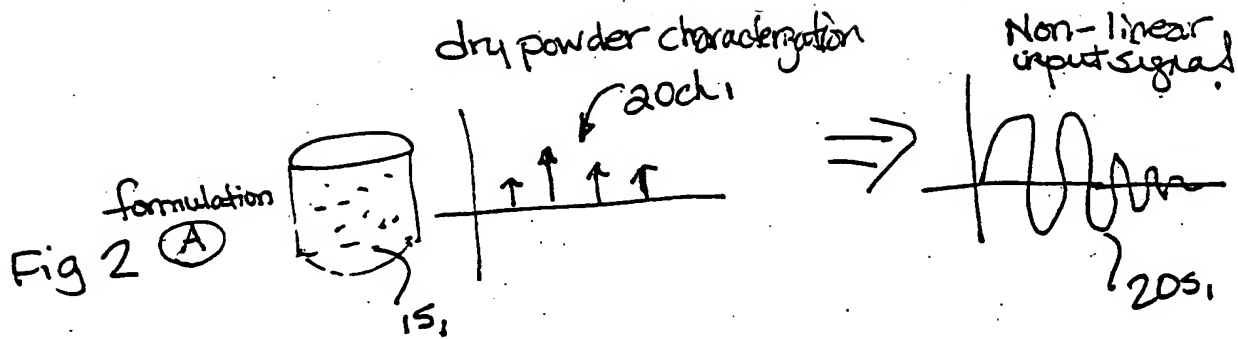


FIGURE 1C



# SIGNAL GENERATION ALGORITHM

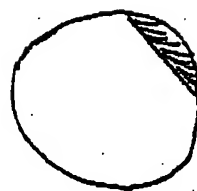


Fig. 3A

Measure time between  
arches for  
pawlers in  
rotating drum

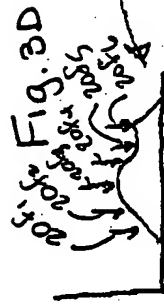


Fig. 3D

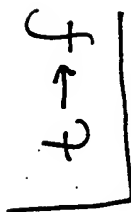
Record top six most

observed frequencies,

typically representing  
75% of distribution



Fig. 3B



convert time  
to frequency  
space

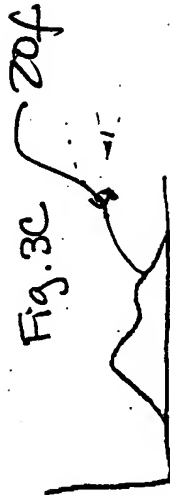


Fig. 3C

plot distribution  
of frequencies

20s



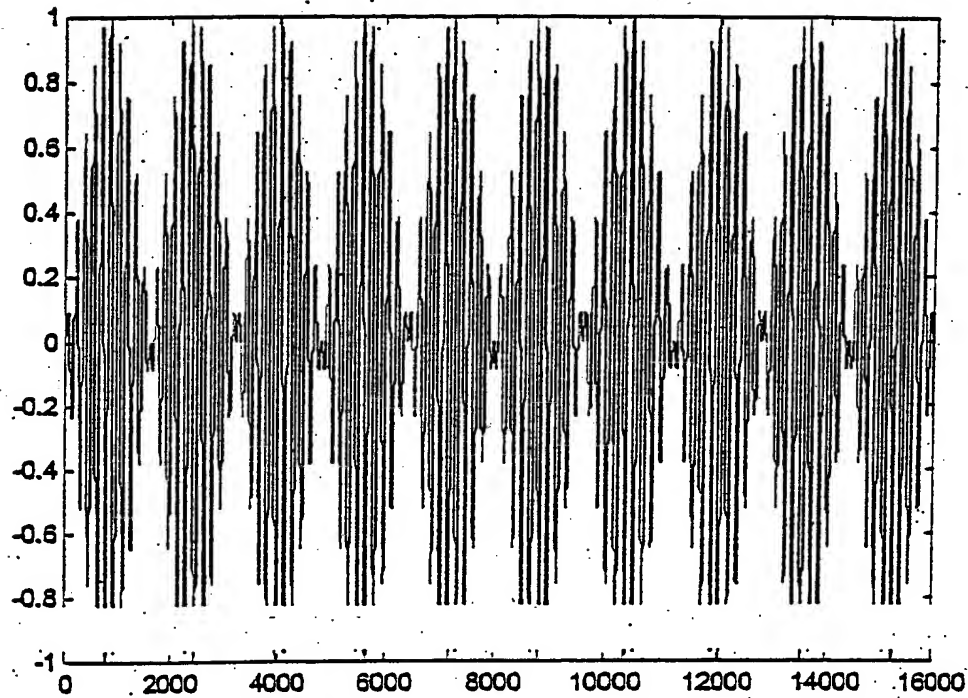
Fig. 3E

Superimpose these six

frequencies to construct  
a single superposition

Signal (can include  
step of adjusting relative  
amplitudes)

FIGURE 14



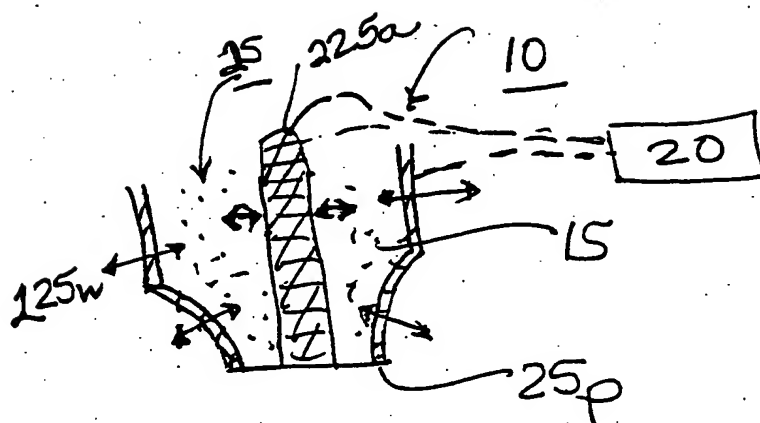


Fig. 5A

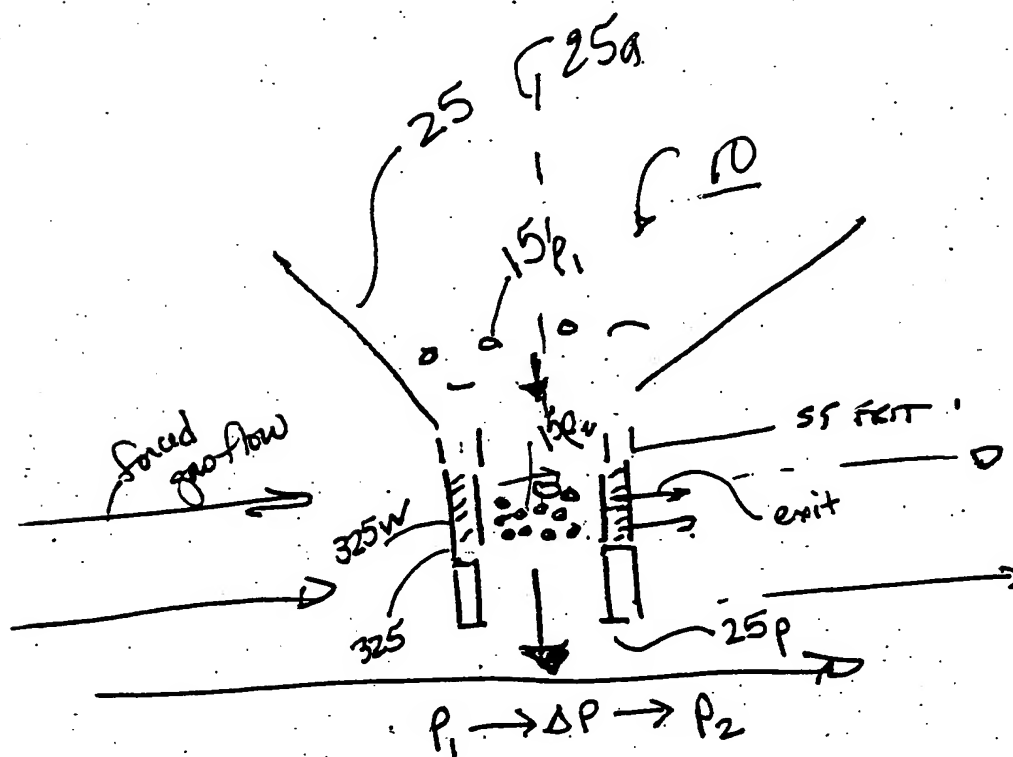


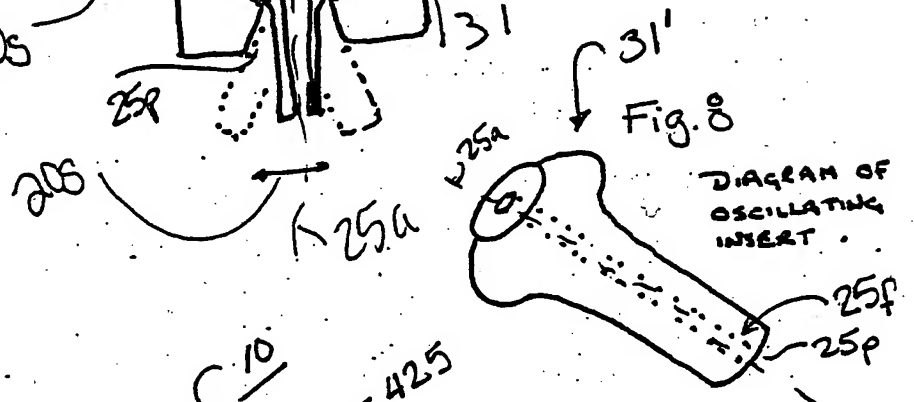
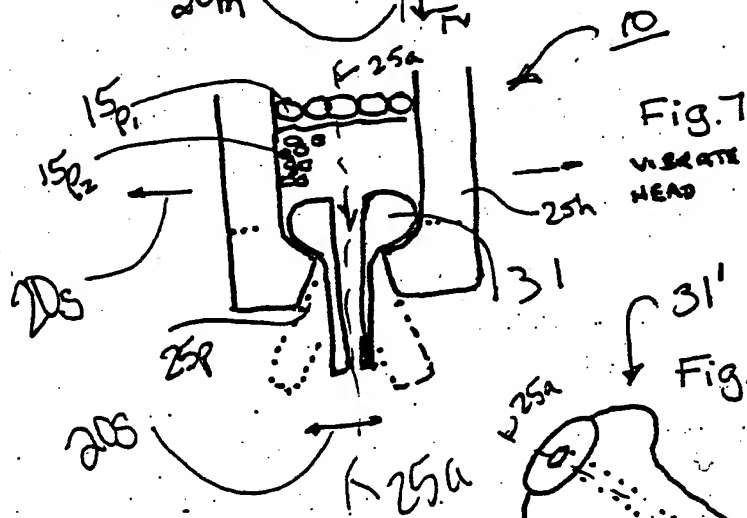
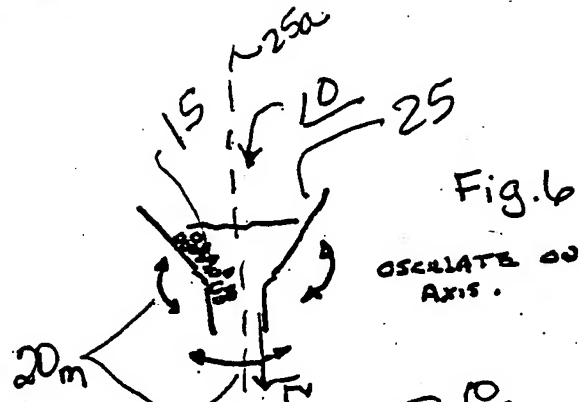
Fig. 5B

# NON-LINEAR VIBRATION / CENTRIFUGATION PRINCIPLE OF POWDER FILLING.

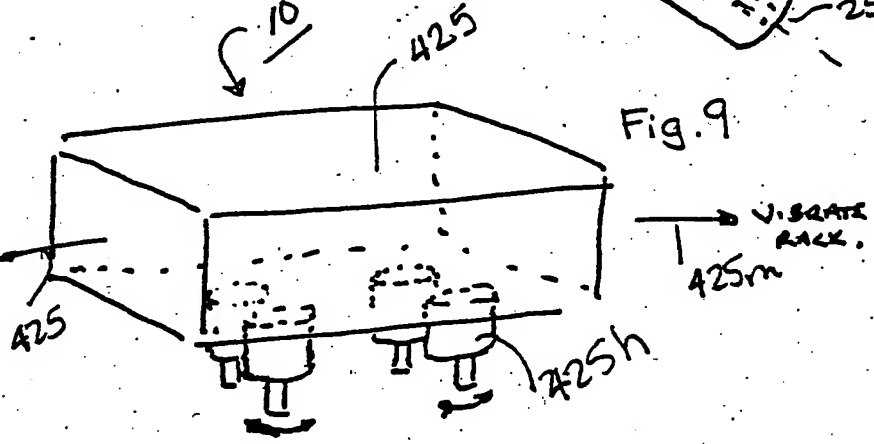
## BASIC PRINCIPLE:

COMBINE NON-LINEAR FUNCTION  
WITH CENTRIFUGAL MOTION

THIS CAN BE ADAPTED  
TO LOCAL NON-LINEAR  
VIBRATION.

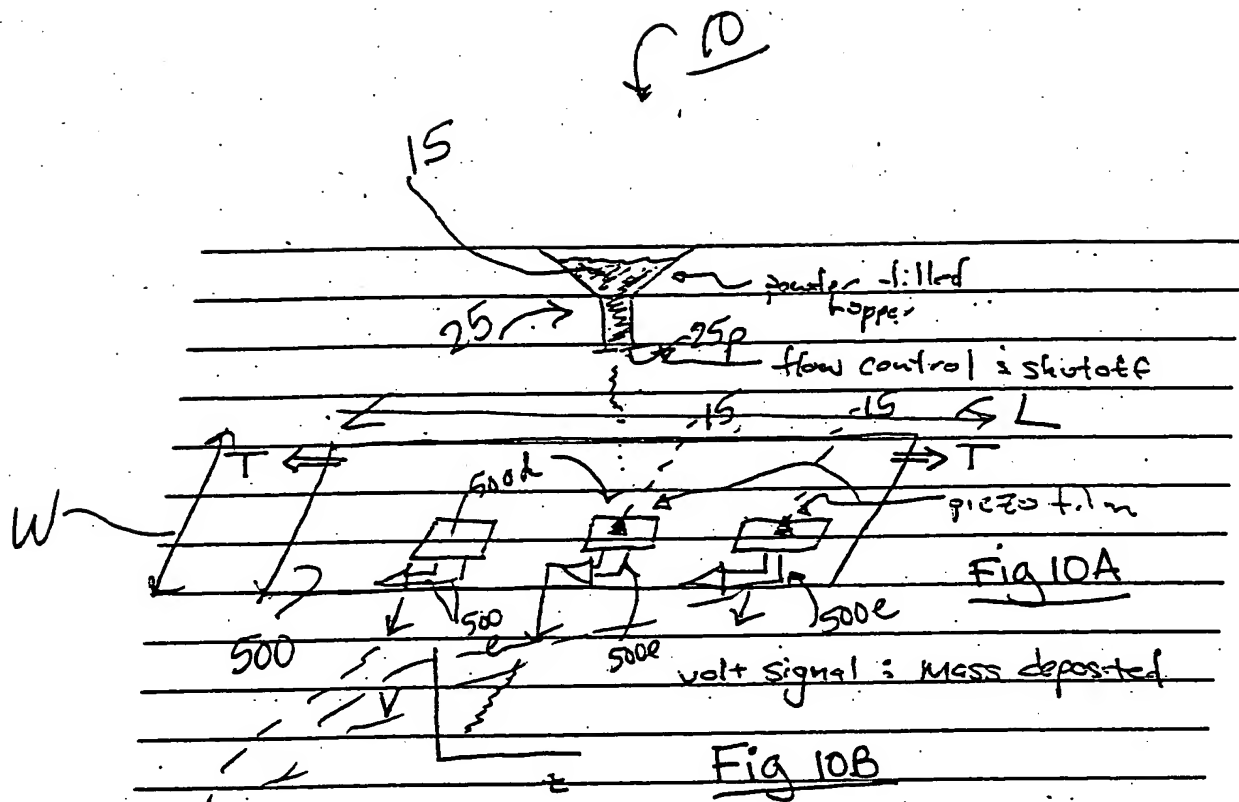


VIBRATION CAN BE  
APPLIED TO A  
RACK OF HEADS FILLING  
FROM SINGLE HOPPER.

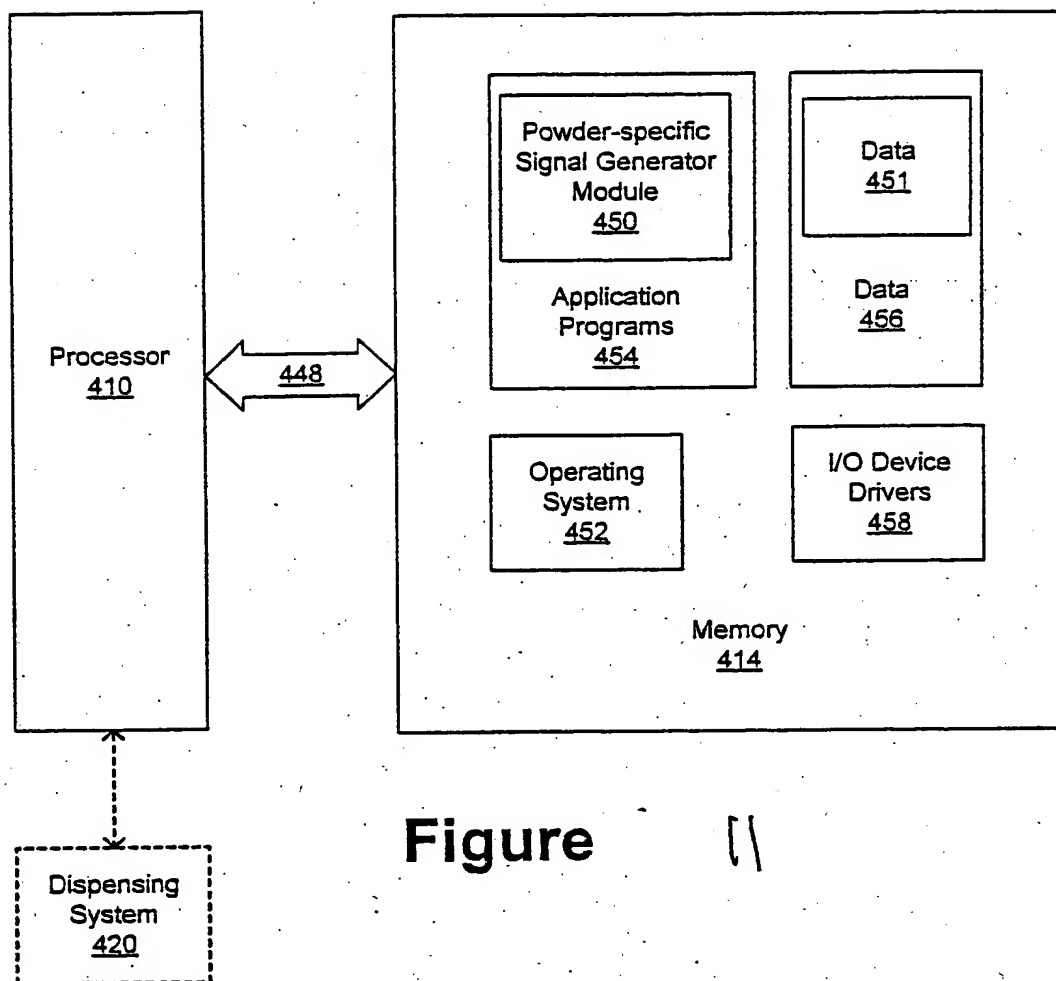


RADIUS (OR EXTREMES) OF MOTION CAN BE VERY SMALL. AT HIGH FREQUENCY  
THE ANGULAR VELOCITY WILL BE SUFFICIENT TO GIVE DIRECTIONAL  
ACCELERATION TO PARTICLES.



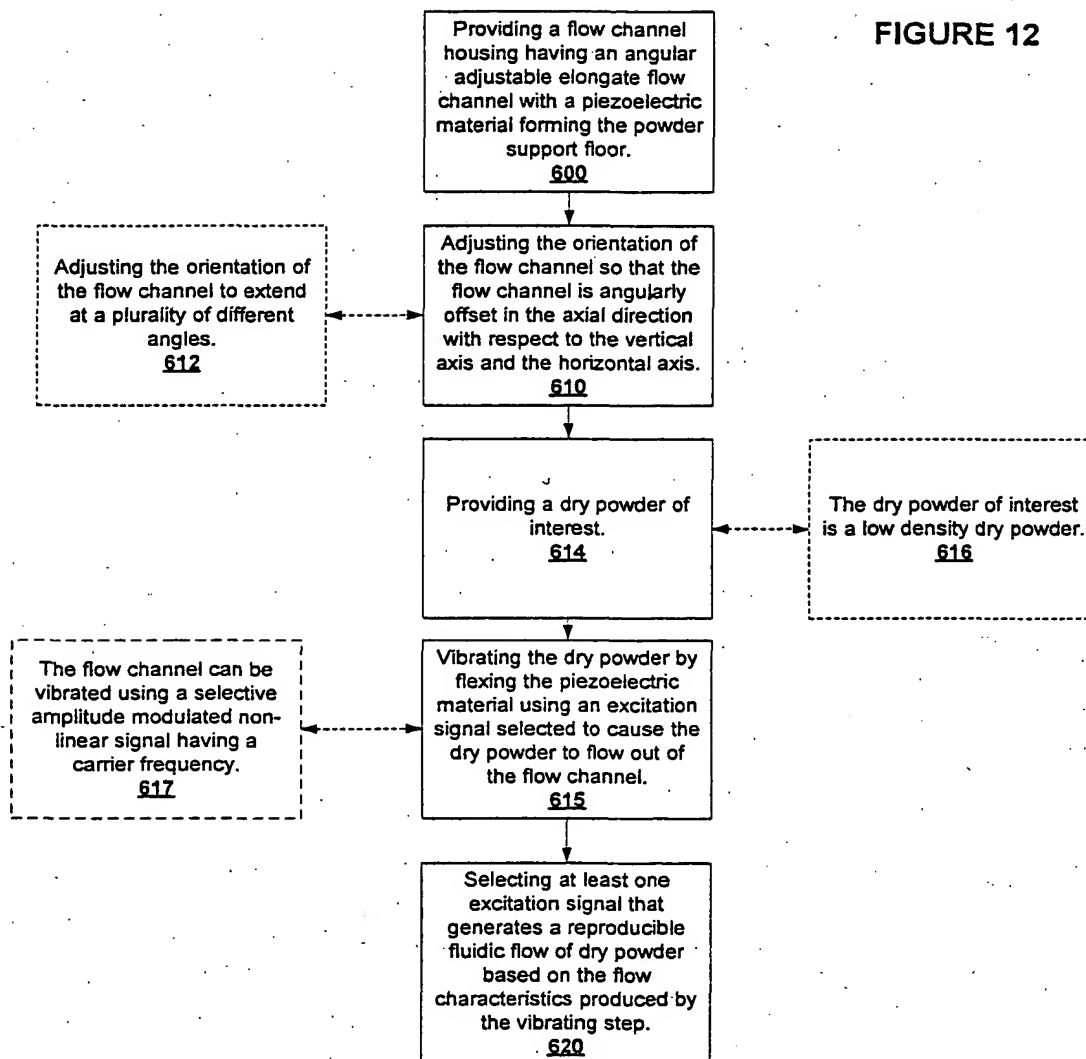


510  
Detection  
system

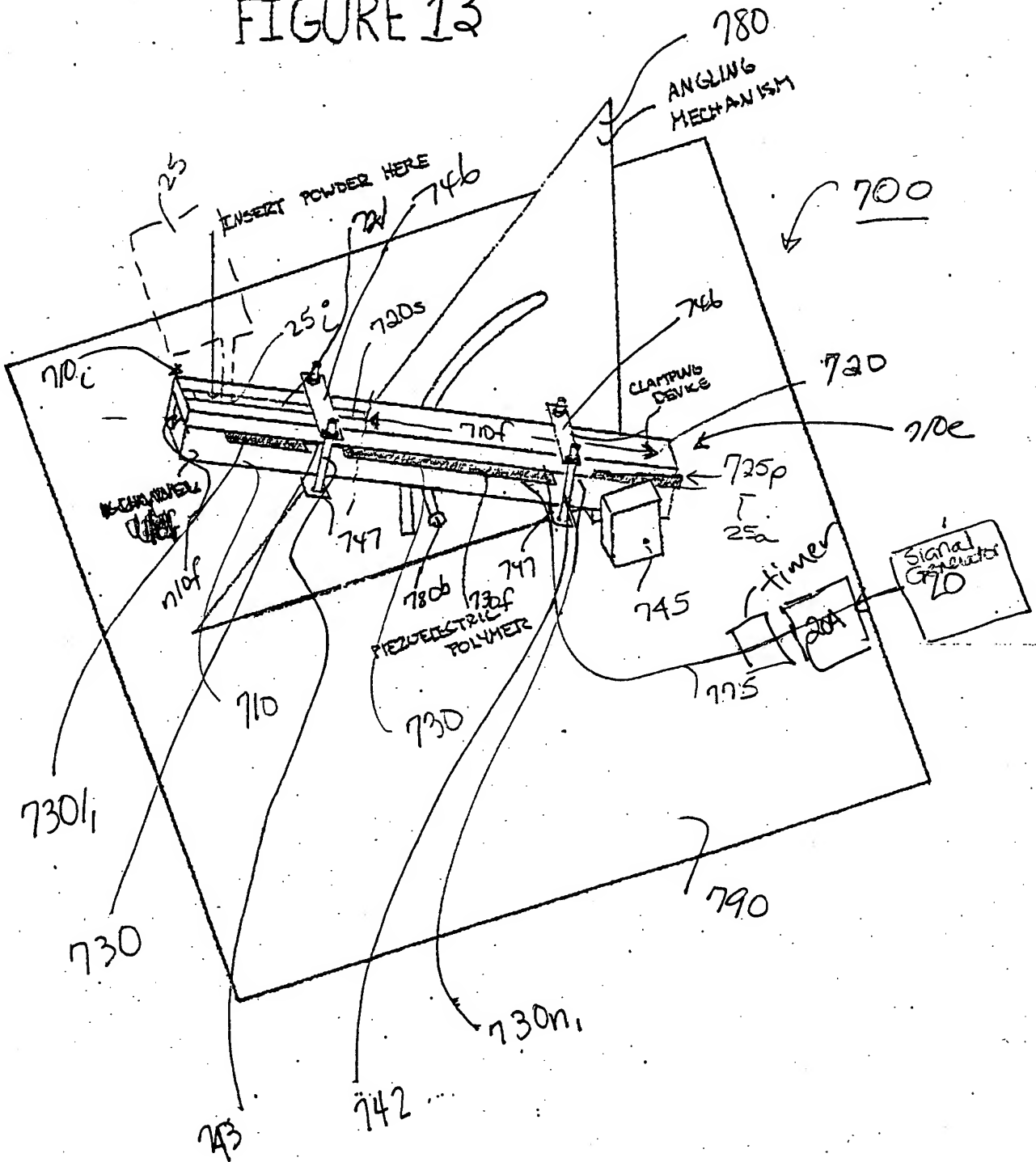


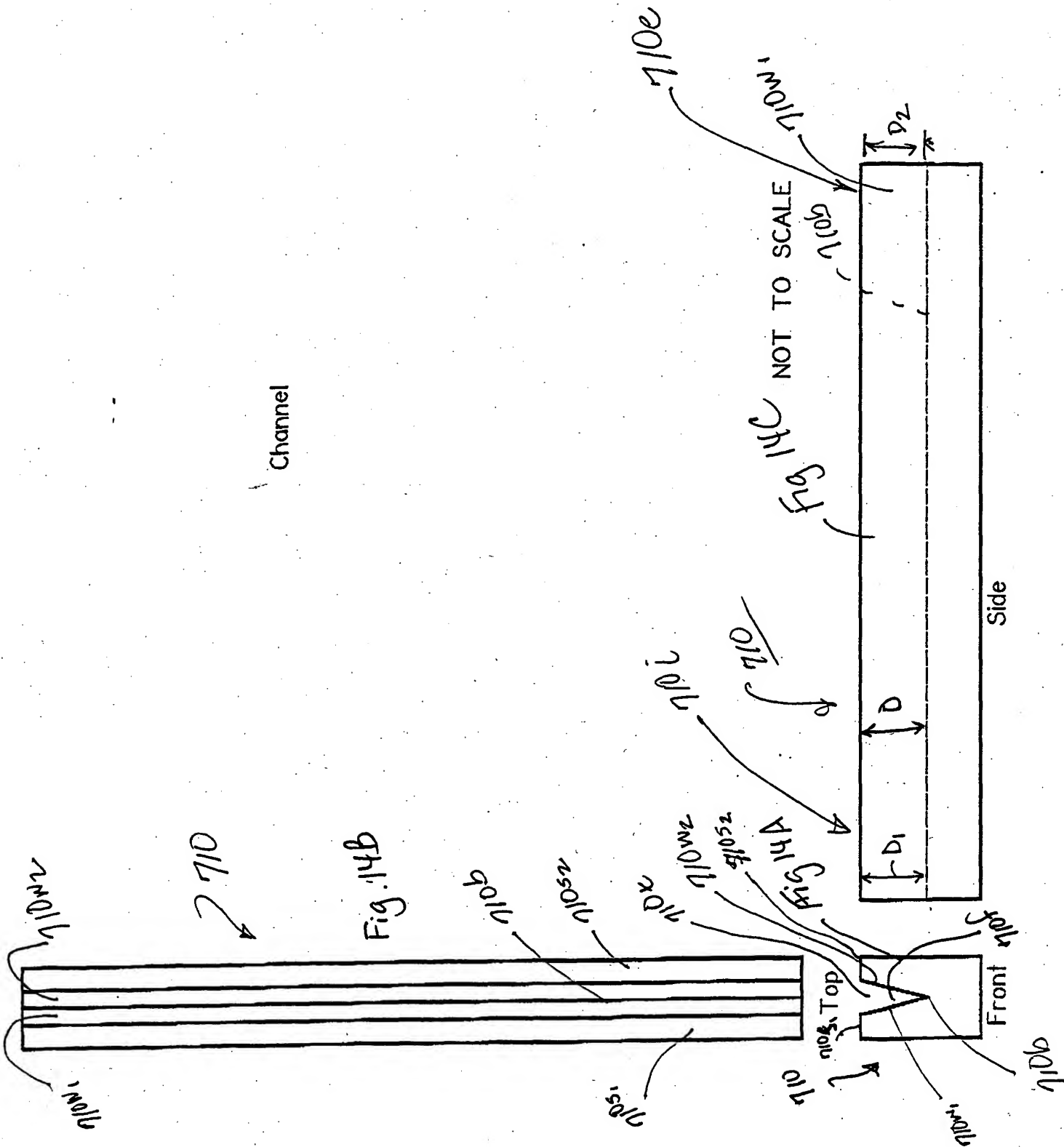
**Figure** 11

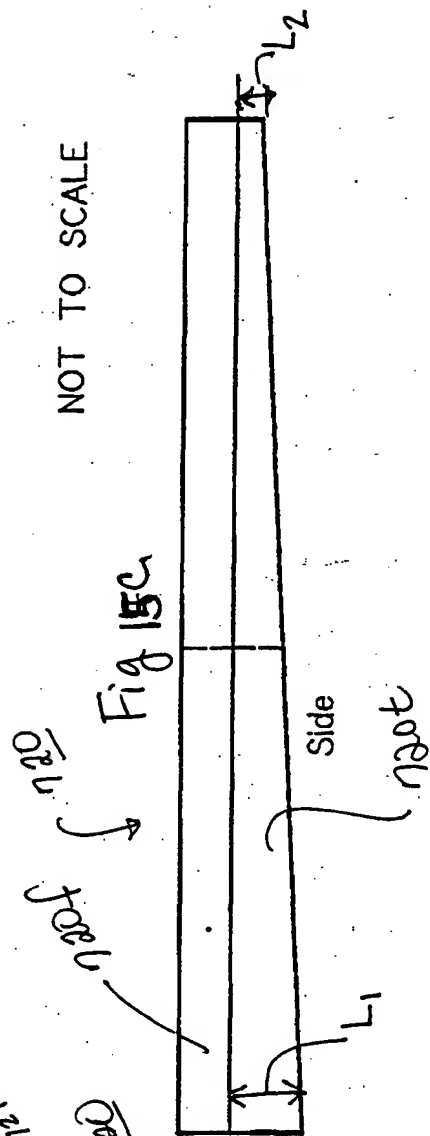
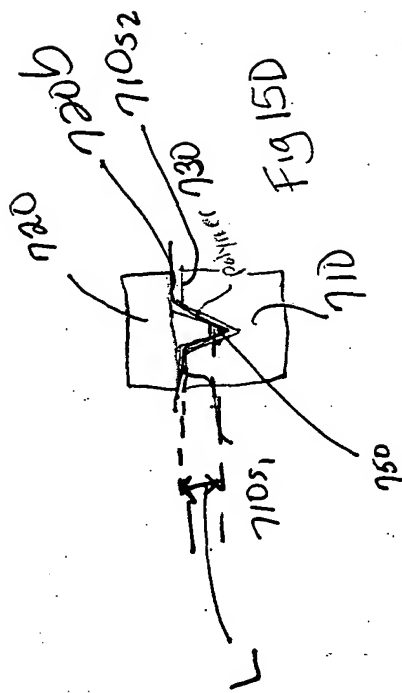
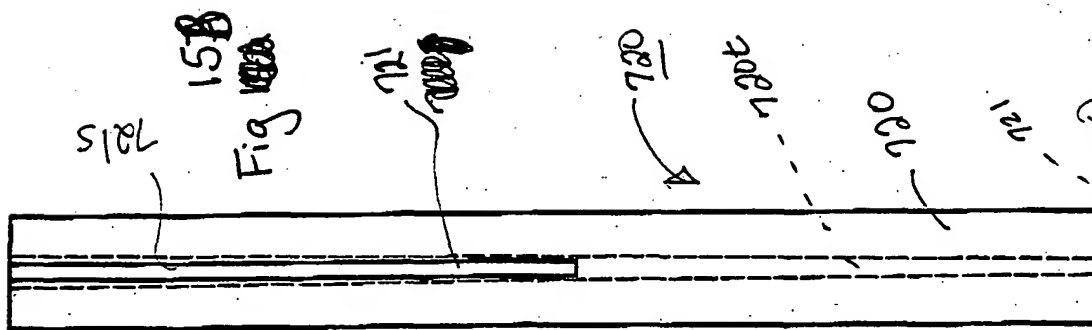
**FIGURE 12**



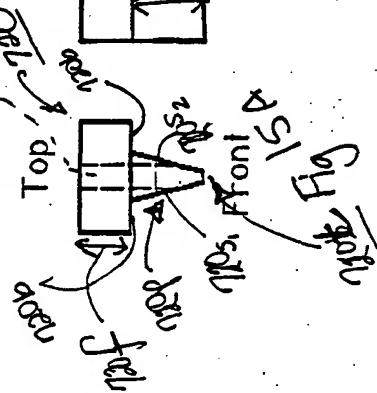
# FIGURE 13







NOT TO SCALE



Part 3: Piezoelectric Polymer  
NOT TO SCALE

